

What is claimed is:

1. A system for spatially stabilizing a selected base point on the optical axis of an eye of a patient, following a saccadic movement of said eye, which comprises:
  - 5 an optical means for identifying said base point; and an illumination means for causing said optical axis of said eye to move from a first orientation to a second orientation to stimulate a saccadic movement of said eye, with a subsequent latency period wherein said selected base point is substantially stabilized.
  - 10 2. A system as recited in claim 1 further comprising:
    - a means for determining a resting period in a heartbeat sequence and a relaxation period in a respiration cycle of said patient; and
    - a computer controller in electronic communication with said determining means for coinciding said resting period and said relaxation period with said latency period to further substantially stabilize said base point during said latency period.
  - 15 3. A system as recited in claim 2 wherein said determining means is a confocal arrangement.
  - 20 4. A system as recited in claim 1 wherein said illumination means is a light source for establishing a fixation point and further wherein said fixation point is moved through an arc of approximately five degrees to move said optical axis of said eye from said first orientation to said second orientation.

5. A system as recited in claim 1 further comprising:  
a laser source for generating a train of laser pulses; and  
a guidance optic for directing said train of laser pulses toward  
said eye for photoablating corneal tissue of said eye during said  
latency period.

6. A system as recited in claim 5 which further comprises a means  
for verifying the alignment of the optical axis of the eye immediately prior to  
said photoablating of said corneal tissue.

7. A system as recited in claim 1 wherein said optical means  
10 includes a confocal arrangement to ascertain the focal point of the specular  
reflection of said illumination means from the anterior surface of said eye.

8. A system as recited in claim 1 further comprising a wavefront  
sensor to identify said base point.

9. A system as recited in claim 8 wherein the wavefront sensor  
15 consists of:  
a wavefront analyzer; and  
an active mirror.

10. A system as recited in claim 5 wherein said train of laser pulses  
is approximately 1500 pulses.

11. A method for spatially stabilizing a selected base point on an optical axis of an eye of a patient following a saccadic movement of said eye which comprises the steps of:

5                   identifying a base point on said optical axis of said eye; and  
                 moving an illumination means to cause said optical axis of said eye to move from a first orientation to a second orientation, for stimulating a saccadic movement of said eye, with a subsequent latency period wherein said selected base point is substantially stabilized.

10          12. A method as recited in claim 11 further comprising the steps of:  
                 determining a resting period in a heartbeat sequence of the patient;

                 determining a relaxation period in a respiration cycle of the patient; and

15          coinciding said resting period and said relaxation period with said latency period to further substantially stabilize said base point during said latency period.

13. A method as recited in claim 12 wherein said resting period and said relaxation period are determined using a confocal arrangement.

20          14. A method as recited in claim 11 wherein said illumination means is a light source for establishing a fixation point and further wherein said fixation point is moved through an arc of approximately five degrees to move said optical axis of said eye from said first orientation to said second orientation.

15. A method as recited in claim 11 further comprising the steps of:  
generating a train of laser pulses; and  
directing said train of laser pulses into said eye during said latency period for photoablating corneal tissue of said eye.

5        16. A method as recited in claim 15 wherein said train of laser pulses is approximately 1500 pulses.

17. A method as recited in claim 15 which further comprises the step of verifying the alignment of the optical axis of the eye immediately prior to said photoablating of said corneal tissue.

10        18. A method as recited in claim 11 wherein said base point is identified using a confocal arrangement to ascertain the focal point of the specular reflection of said illumination means from the anterior surface of said eye.

19        19. A method as recited in claim 11 wherein the said base point is  
15 identified using a wavefront sensor.

20. A method as recited in claim 19 wherein said wavefront sensor consists of:

a wavefront analyzer; and  
an active mirror.